

Appln No. 10/644,391
Amendment dated May 10, 2006
Reply to Final Office Action dated November 10, 2005

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of the claims in this application:

Listing of Claims:

1-17. (Cancelled)

18. (Currently Amended) An exhaust gas turbocharger (1) having a housing and having a shaft (2) rotatable about its longitudinal axis in the housing and on which a turbine wheel (4) and a compressor wheel (3) are seated and which is guided in radial bearings (5, 6) which are magnetic bearings and in at least one axial bearing (9), the bearings (5, 6, 9) each having a bearing plate (12, 14, 16) which is seated on the shaft (2) and at least one stator (19, 20, 21, 22, 49, 50) which lies axially opposite said bearing plate on at least one side, thus forming a gap between the bearing plate and the stator, wherein at least one flow duct (62, 65) for supplying an air stream to at least one bearing gap is formed in the housing, and wherein the radial bearings (5,6) include a plurality of permanent magnets (23, 24, 25, 26, 27, 28, 29, 30) disposed in the gap between the bearing plates (12, 16) and the stator (19, 20, 21, 22), the plurality of permanent magnets (23, 24, 25, 26, 27, 28, 29, 30) being arranged in axially adjacent pairs and being polarized so as to attract one another, whereby an axially directed and attracting magnetic field is produced in the gap between the bearing plates (12, 16) and the stators (19, 20, 21, 22).

19 (Previously Presented) The exhaust gas turbocharger according to claim 18, wherein the at least one flow duct opens into a compressor housing (64) of the turbocharger (1).

20. (Previously Presented) The exhaust gas turbocharger according to claim 18, wherein the flow duct (62, 65) is formed at least in sections by a pipeline (65) running outside the housing.

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21. (Previously Presented) The exhaust gas turbocharger according to claim 18, wherein a separate flow duct leads to each of the bearings (5, 6, 9).
22. (Previously Presented) The exhaust gas turbocharger according to claim 18, wherein the gaps of the bearings (5, 6, 9) communicate with one another via further flow ducts formed in the housing.
23. (Previously Presented) The exhaust gas turbocharger according to claim 22, wherein the flow duct (62, 65) leads to only to the turbine-wheel-side bearing (6).
24. (Previously Presented) The exhaust gas turbocharger according to claim 18, wherein the housing has at least one outlet opening (63, 66) for the air which flows through the bearings (5, 6, 9).
25. (Previously Presented) The exhaust gas turbocharger according to claim 24, wherein the outlet opening is formed by a gap between the housing and the shaft (2) in the region of the compressor wheel (3).
26. (Previously Presented) The exhaust gas turbocharger according to claim 19, wherein a cross section of the flow duct (62, 65) is small in comparison with a cross section of a line, leading to the engine, for the compressed air
27. (Currently Amended) A method of cooling magnetic bearings (5, 6, 9) of an exhaust gas turbocharger (1), the exhaust gas turbocharger having a housing and a shaft (2) rotatable about its longitudinal axis in the housing and on which a turbine wheel (4) and a compressor wheel (3) are seated and which is guided in radial bearings (5,6) and in at least one axial bearing (9), and the bearings (5, 6, 9) having bearing plates which are arranged on the shaft (2) and stators (19, 20, 21, 22, 49, 50) which are fixed to the housing and are separated from said bearing plates by an

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air gap, and wherein the radial bearings (5,6) include a plurality of permanent magnets (23, 24, 25, 26, 27, 28, 29, 30) disposed in the air gap between the bearing plates (12, 16) and stators (19, 20, 21, 22), the plurality of permanent magnets (23, 24, 25, 26, 27, 28, 29, 30) being arranged in axially adjacent pairs and being polarized so as to attract one another, whereby an axially directed and attracting magnetic field is produced in the gap between the bearing plates (12, 16) and the stators (19, 20, 21, 22), wherein the bearing gaps have an air stream applied.

28. (Previously Presented) The method according to claim 27, wherein the air stream is branched off as a partial stream from air which is compressed by means of the compressor wheel (3).

29. (Previously Presented) The method according to claim 27, wherein the air stream is led through a housing duct (62, 65) to at least one of the bearing gaps.

30. (Previously Presented) The method according to claim 27, wherein the bearing gaps have an air stream applied independently of one another.

31. (Previously Presented) The method according to claim 27, wherein further flow ducts are formed in the housing between the bearing gaps such that the air stream ~~can flow~~ flows successively through the bearing gaps.

32. (Previously Presented) The method according to claim 31, wherein the air stream is led through the bearing gaps from the turbine wheel side to the compressor wheel side.

33. (Previously Presented) The method according to claim 27, wherein after the air stream passes through at least one bearing gap, the air stream is directed into the region outside the housing via an outlet opening.

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34. (Previously Presented) The method according to claim 33, wherein the outlet opening is provided by omitting a compressor-wheel-side shaft sealing ring.